

"WELL PLUGGING AND ABANDONMENT METHODS"

Composite Cover

Permanent Closure of Monitoring Wells. Any ground-water monitoring well that is to be permanently removed from service will be completely filled in such a manner as to prevent vertical movement of water within the borehole as well as preventing the annular space surrounding the well casing from becoming a conduit for possible contamination of the groundwater., The well closure will be accomplished under the direct supervision of a currently licensed water well driller who shall be responsible for verification of procedures and materials used.

Materials. The following materials may be used for permanent closure of ground-water monitoring wells:

1. Neat cement conforming to ASTM standard C150 of sufficient weight (not less than 15 lbs/gallon) to prevent the flow of any water into the hole from any aquifer penetrated.
2. Cement grout consisting of equal parts of cement conforming to ASTM standard C150 and sand/aggregate with no more than 6 gallons of water per sack of cement.
3. Bentonite-based products specifically designed for permanent well closure, which are mixed and placed according to manufacturer's recommended procedures (i.e. Plug-Gel, Shur-Gel, etc.).
4. The liquid phase of the closure fluid shall be non-saline water containing no chemicals or toxic materials or other substances which may decompose or possibly contaminate the groundwater.

Placement of Materials.

Neat Cement and Grout. Neat Cement and Grout shall be introduced at the bottom of the well and placed progressively upward to the top of the well. Sealing material shall be placed by the use of a grout pipe, tremie line or dump bailer in order to avoid segregation or dilution of the materials.

Bentonite-based Products. Bentonite-based products shall be mixed and placed according to the manufacturer's recommended procedures.

Termination of Casing. The casings of wells to be closed shall be severed a minimum of 2 feet below the natural ground surface adjacent to the well or at the collar of the hole, whichever is the lower elevation. A minimum of 2 feet of compacted native material shall be placed above the closed well upon completion.

Report of Closure. Within 30 days of the completion of the well closure procedures, a report will be submitted to the state engineer by the licensed driller giving data relating to the well's

closure. The report will be made on forms furnished by the state engineer and shall contain such information as he/she may require, including, but not limited to the following:

1. Name of licensed driller or other person(s) performing closure procedures.
2. Name of well owner at the time of closure.
3. Address or location of well by section, township and range.
4. Closure materials, equipment, and procedures used.
5. Water right or file number covering the well.
6. Final disposition of the well.
7. Date of completion.